

# PDTC143T series

## FEATURES

- Built-in bias resistors
- Simplified circuit design
- Reduction of component count
- Reduced pick and place costs.

## APPLICATIONS

- General purpose switching and amplification
- Inverter and interface circuits
- Circuit applications.

## PRODUCT OVERVIEW

TYPE NUMBER	PACKAGE		MARKING CODE	PNP COMPLEMENT
	PHILIPS	EIAJ		
PDTC143TE	SOT416	SC-75	40	PDTA143TE
PDTC143TEF	SOT490	SC-89	11	PDTA143TEF
PDTC143TK	SOT346	SC-59	52	PDTA143TK
PDTC143TM	SOT883	SC-101	DM	PDTA143TM
PDTC143TS	SOT54 (TO-92)	SC-43	TC143T	PDTA143TS
PDTC143TT	SOT23	–	*33 <sup>(1)</sup>	PDTA143TT
PDTC143TU	SOT323	SC-70	*52 <sup>(1)</sup>	PDTA143TU

## QUICK REFERENCE DATA

SYMBOL	PARAMETER	TYP.	MAX.	UNIT
V <sub>CEO</sub>	collector-emitter voltage	–	50	V
I <sub>O</sub>	output current (DC)	–	100	mA
R1	bias resistor	4.7	–	kΩ
R2	open	–	–	–

## DESCRIPTION

NPN resistor-equipped transistor (see “Simplified outline, symbol and pinning” for package details).

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## SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PINNING	
		PIN	DESCRIPTION
PDTC143TS	<p style="text-align: center;"><i>MAM361</i></p>	1 2 3	base collector emitter
PDTC143TE PDTC143TEF PDTC143TK PDTC143TT PDTC143TU	<p style="text-align: center;">Top view <span style="margin-left: 150px;"><i>MDB270</i></span></p>	1 2 3	base emitter collector
PDTC143TM	<p style="text-align: center;">Bottom view <span style="margin-left: 150px;"><i>MHC507</i></span></p>	1 2 3	base emitter collector

# PDTC143T series

## ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PDTC143TE	–	plastic surface mounted package; 3 leads	SOT416
PDTC143TEF	–	plastic surface mounted package; 3 leads	SOT490
PDTC143TK	–	plastic surface mounted package; 3 leads	SOT346
PDTC143TM	–	leadless ultra small plastic package; 3 solder lands; body 1.0 × 0.6 × 0.5 mm	SOT883
PDTC143TS	–	plastic single-ended leaded (through hole) package; 3 leads	SOT54
PDTC143TT	–	plastic surface mounted package; 3 leads	SOT23
PDTC143TU	–	plastic surface mounted package; 3 leads	SOT323

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	50	V
$V_{CEO}$	collector-emitter voltage	open base	–	50	V
$V_{EBO}$	emitter-base voltage	open collector	–	5	V
$I_O$	output current (DC)		–	100	mA
$I_{CM}$	collector current		–	100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$			
	SOT54	note 1	–	500	mW
	SOT23	note 1	–	250	mW
	SOT346	note 1	–	250	mW
	SOT323	note 1	–	200	mW
	SOT490	notes 1 and 2	–	250	mW
	SOT883	notes 2 and 3	–	250	mW
	SOT416	note 1	–	150	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

## Notes

1. Refer to standard mounting conditions.
2. Reflow soldering is the only recommended soldering method.
3. Refer to SOT883 standard mounting conditions; FR4 with 60  $\mu\text{m}$  copper strip line.

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## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air		
	SOT54	note 1	250	K/W
	SOT23	note 1	500	K/W
	SOT346	note 1	500	K/W
	SOT323	note 1	625	K/W
	SOT490	notes 1 and 2	500	K/W
	SOT883	notes 2 and 3	500	K/W
	SOT416	note 1	833	K/W

### Notes

1. Refer to standard mounting conditions.
2. Reflow soldering is the only recommended soldering method.
3. Refer to SOT883 standard mounting conditions; FR4 with 60 μm copper strip line.

## CHARACTERISTICS

T<sub>amb</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I <sub>CBO</sub>	collector-base cut-off current	V <sub>CB</sub> = 50 V; I <sub>E</sub> = 0 A	–	–	100	nA
I <sub>CEO</sub>	collector-emitter cut-off current	V <sub>CE</sub> = 30 V; I <sub>B</sub> = 0 A	–	–	1	μA
		V <sub>CE</sub> = 30 V; I <sub>B</sub> = 0 A; T <sub>j</sub> = 150 °C	–	–	50	μA
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = 5 V; I <sub>C</sub> = 0 A	–	–	100	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = 5 V; I <sub>C</sub> = 1 mA	200	–	–	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = 5 mA; I <sub>B</sub> = 0.25 mA	–	–	100	mV
R1	input resistor		3.3	4.7	6.1	kΩ
C <sub>c</sub>	collector capacitance	I <sub>E</sub> = i <sub>e</sub> = 0 A; V <sub>CB</sub> = 10 V; f = 1 MHz	–	–	2.5	pF